Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A user equipment (UE) capable of conducting cell search in a wireless communication system having a plurality of base stations, each of which transmits a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a system frame, and a midamble code in a broadcast channel, a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations, the UE comprising:

a receiver ~~for receiving~~ configured to receive said PSCs and said midamble codes;

means to identify a received midamble code having a highest power level including:

a signal power measuring device for measuring the power level of received PSCs and identifying a frame timing of received PSCs which exceed a power threshold; and

a processor ~~for analyzing~~ configured to analyze data signals received in the primary synchronization channel associated with the PSC having the highest power level of said received PSCs which exceeded said power threshold; and

said processor further configured to synchronize ~~and synchronizing~~ with the base station associated with ~~said highest PSC, said data signals including~~

~~secondary synchronization codes~~ the received midamble code identified as having the highest power level.

2. (currently amended): The user equipment of claim 1 wherein said signal power measuring device comprises:

a matched filter matched to the common PSC ~~for measuring~~ configured to measure the power level of each of said received PSCs;

a noise estimator ~~for determining~~ configured to determine the noise power received from each transmission of said plurality of base stations and calculating said power threshold; and

a comparator ~~for determining~~ configured to determine the power threshold and comparing said power levels of said received PSCs with said threshold and ~~outputting~~ to output the frame timing of said PSC having the highest power level.

3. (previously presented): The user equipment of claim 2 wherein said processor comprises:

an SSC processor, responsive to said frame timing output from said signal power measuring device, which detects said secondary synchronization codes in said primary synchronization channel to identify the base station associated with the frame timing to extract base station information which includes the midamble codes; and

a synchronization processor, responsive to said SSC processor, which detects a primary scrambling code.

4. (original): The user equipment of claim 3 wherein said base station information further includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

5. (currently amended): A wireless communication system comprising:

a plurality of base stations, each of which transmits a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a system frame, and a midamble code in a broadcast channel, a transmitted power level of the PSC and midamble code being a common fixed ratio for each of said base stations; and

a user equipment (UE) capable of conducting cell search, comprising:

a receiver ~~for receiving~~ configured to receive said PSCs and said midamble codes;

means to identify a received midamble code having a highest power level including:

a signal power measuring device ~~for measuring~~ configured to measure the power level of received PSCs and ~~identifying~~ identify a frame timing of received PSCs which exceed a power threshold; and

a processor ~~for analyzing~~ configured to analyze data signals received in the primary synchronization channel associated with the PSC having the highest power level of said received PSCs which exceeded said power threshold; and

said processor further configured to synchronize ~~and synchronizing~~ with the base station associated with said ~~highest PSC, said data signals including~~

~~secondary synchronization codes~~ received midamble code identified as having the highest power level.

6. (currently amended): The system of claim 5 wherein said signal power measuring device comprises:

a matched filter matched to the common PSC ~~for measuring~~ configured to measure the power level of each of said received PSCs;

a noise estimator ~~for determining~~ configured to determine the noise power received from each transmission of said plurality of base stations and calculating said power threshold; and

a comparator ~~for determining~~ configured to determine the power threshold and comparing said power levels of said received PSCs with said threshold and outputting the frame timing of said PSC having the highest power level.

7. (previously presented): The system of claim 6 wherein said processor comprises:

an SSC processor, responsive to said frame timing output from said signal power measuring device, which detects said secondary synchronization codes in said primary synchronization channel to identify the base station associated with the frame timing to extract base station information which includes the midamble codes; and

a synchronization processor, responsive to said SSC processor, which detects a primary scrambling code.

8. (original): The system of claim 7 wherein said base station information further includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

9. (currently amended): A method of cell search in a wireless communication system having a plurality of base stations and a user equipment (UE), the method comprising:

each of said plurality of base stations:

transmitting a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a frame; and

transmitting a midamble code in a broadcast channel, whereby a transmission power level of the midamble code and the PSC is at a ~~same~~ fixed common ratio for each of said base stations; and

at the UE:

receiving said PSCs and said midamble codes;

identifying a received midamble code having a highest power level including:

measuring the power level of received PSCs;

identifying a frame timing of the PSC with the highest power level of the received PSCs which exceed a power threshold;

analyzing data signals received in the primary synchronization channel having received PSCs which exceed said power threshold ~~said data signals including secondary synchronization codes~~; and

synchronizing with the base station associated with ~~said highest PSC~~ the received midamble code identified as having the highest power level.

10. (currently amended): The method of claim 9 further comprising the steps of:

determining said power threshold based upon the noise power received from each transmission of said plurality of base stations;

comparing said measured power levels of said received PSC with said threshold and outputting the frame timing of said highest PSC;

detecting ~~said~~ secondary synchronization codes in said primary synchronization channel to identify the base station associated with the frame timing to extract base station information which includes said midamble codes; and

detecting a primary scrambling code.

11. (original): The method of claim 10 wherein said base station information includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

12. (currently amended): A user equipment (UE) capable of conducting cell search in a wireless communication system having a plurality of base stations, each of which transmits a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a system frame, and a midamble code in a broadcast channel, a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations, the UE comprising:

a receiver ~~for receiving~~ configured to receive said PSCs and midamble codes;

means to identify received midamble codes that have a power level such that the ratio of a power threshold and the received power level of the midamble code exceeds said common fixed ratio including;

a signal power measuring device ~~for measuring~~ configured to measure the power level of received PSCs and ~~identifying~~ to identify a frame timing of the received PSCs which exceed the ~~a~~ power threshold to extract base station information which includes the midamble codes; and

a processor ~~for detecting~~ configured to detect a primary scrambling code associated with the received PSCs which exceed the power threshold; and

said processor further configured to synchronize ~~and synchronizing~~ with ~~the~~ a base station associated with one of ~~said PSCs which exceed the power threshold, whereby the ratio of the power threshold and the received power level of the midamble code associated with said one PSC exceeds said common fixed ratio~~ the midamble codes identified as having a power level such that the ratio of the power threshold and the received power level of the midamble code exceeds said common fixed ratio.

13. (currently amended): The UE of claim 12 wherein said signal power measuring device comprises:

a matched filter matched to the common PSC ~~for measuring~~ configured to measure the power level of each of said received PSCs;

a noise estimator ~~for determining~~ configured to determine said power threshold based upon the noise power received from each transmission of said plurality of base stations and calculating said power threshold; and

a comparator ~~for comparing~~ configured to compare said measured power levels of said received PSC with said threshold and outputting the frame timing of the identified PSCs which exceed the power threshold.

14. (original): The UE of claim 13 wherein the identity of the base station associated with received PSCs which exceed the power threshold is known to the UE based on said frame timing, said known identity being used to extract said midamble code.

15. (original): The UE of claim 14 wherein said processor synchronizes to the base station associated with the highest power level of one of said PSCs which exceed the power threshold.

16. (original): The UE of claim 15 wherein said base station information further includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

17. (currently amended): A method of cell search in a wireless communication system having a plurality of base stations and a user equipment (UE), the method comprising:

each of said plurality of base stations:

transmitting a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a frame; and

transmitting a midamble code in a broadcast channel, whereby a transmission power level of the midamble code and a transmission power level of the PSC is at a ~~same~~ common fixed ratio for each of said base stations; and

at the UE:

receiving said PSCs and said midamble codes;

identifying received midamble codes that have a power level such that the ratio of a power threshold and the received power level of the midamble code exceeds said common fixed ratio including:

measuring the power level of received PSCs;

identifying a frame timing of the received PSCs which exceed ~~a~~ the power threshold to extract base station information which includes the midamble codes; and

detecting a primary scrambling code associated with the received PSCs which exceed the power threshold in response to said midamble codes; and

synchronizing with ~~the~~ a base station associated with one of ~~said PSCs which exceed the power threshold, whereby the ratio of the power threshold and the received power level of the midamble code associated with said one PSC exceeds said common ratio~~ the midamble codes identified as having a power level such that the ratio of the power threshold and the received power level of the midamble code exceeds said common fixed ratio.

18. (previously presented): The method of claim 17 further comprising the steps of:

determining said power threshold based upon the noise power received from each transmission of said plurality of base stations; and

comparing said measured power levels of said received PSC with said threshold and outputting the frame timing of the identified PSCs which exceed the predetermined power threshold.

19. (original): The method of claim 18 wherein said UE synchronizes to the base station associated with the highest power level of one of said PSCs which exceed the power threshold.

20. (original): The method of claim 18 wherein said base station information further includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

21. (currently amended): A wireless time division duplex communication system comprising:

a plurality of base stations, each of which transmits a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a system frame, and a midamble code in a broadcast channel, a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations; and

a UE comprising:

a receiver ~~for receiving~~ configured to receive said PSCs and said midamble codes;

means for identifying received midamble codes that have a power level such that the ratio of a power threshold and the received power level of the midamble code exceeds said common fixed ratio including:

a signal power measuring device ~~for measuring~~ configured to measure the power level of received PSCs and ~~identifying~~ identify a frame timing of the received PSCs which exceed the ~~a~~ power threshold to extract base station information which includes the midamble codes; and

a processor ~~for detecting~~ configured to detect a primary scrambling code associated with the received PSCs which exceed said power threshold; and

said processor further configured to synchronize ~~and synchronizing~~ with the base station associated with one of ~~said PSCs which exceed the power threshold, whereby the ratio of the power threshold and the received power level of the midamble code associated with said one PSC exceeds said common ratio~~ the midamble codes identified as having a power level such that the ratio of the power threshold and the received power level of the midamble code exceeds said common fixed ratio.

22. (currently amended): The system of claim 21 wherein said signal power measuring device comprises:

a matched filter matched to the common PSC ~~for measuring~~ configured to measure the power level of each of said received PSCs;

a noise estimator ~~for determining~~ configured to determine said power threshold based upon the noise power received from each transmission of said plurality of base stations; and

a comparator ~~for comparing~~ configured to compare said measured power levels of said received PSC with said threshold and ~~outputting~~ output the frame timing of the identified PSCs which exceed the power threshold.

23. (original): The system of claim 22 wherein the identity of the base station associated with received PSCs which exceed the power threshold is known to the UE based on said frame timing, said known identity being used to extract said midamble code.

24. (original): The system of claim 23 wherein said UE synchronizes to the base station associated with the highest power level of one of said PSCs which exceed the power threshold.

25. (original): The UE of claim 23 wherein said base station information further includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

26. (currently amended): A wireless time division duplex communication system comprising:

a plurality of base stations, ~~which~~ each of which transmits a common primary synchronization code (PSC) in a primary synchronization channel at a different timing within a system frame, and a midamble code in a broadcast channel, a transmitted power level of the PSC and the midamble code being at a common fixed ratio for each of said base stations; and

a UE comprising:

~~a~~ means for receiving said PSCs and said midamble codes;

means for identifying received midamble codes that have a power level such that the ratio of a power threshold and the received power level of the midamble code exceeds said common fixed ratio including:

~~a~~ means for measuring the power level of received PSCs and identifying a frame timing of the received PSCs which exceed ~~a~~ the power threshold to extract base station information which includes the midamble codes; and

~~a~~ means for detecting primary scrambling code associated with said received PSCs which exceed the power threshold; and

means for synchronizing with the base station associated with one of ~~said PSCs which exceed the power threshold, whereby the ratio of the power threshold and the received power level of the midamble code associated with said one PSC exceeds said common ratio~~ the midamble codes identified as having a power level such that the ratio of the power threshold and the received power level of the midamble code exceeds said common fixed ratio.

27. (original): The system of claim 26 wherein said signal power measuring device comprises:

a means for determining said power threshold based upon the noise power received from each transmission of said plurality of base stations; and

a means for comparing said measured power levels of said received PSCs with said threshold and outputting the frame timing of the identified PSCs which exceed the power threshold.

28. (original): The system of claim 27 wherein the identity of the base station associated with received PSCs which exceed the power threshold is known to the UE based on said frame timing, said known identity being used to extract said midamble code.

29. (original): The system of claim 28 wherein said UE synchronizes to the base station associated with the highest power level of one of said PSCs which exceed the power threshold.

30. (original): The UE of claim 28 wherein said base station information further includes a time offset, frame index number, time slot of the transmitted PSC, received power, and time of arrival relative to the UE.

31-34. (previously cancelled):

35. (currently amended): A method of time synchronizing a plurality of base stations in a wireless communication system, the system having a plurality of base stations, each of which transmits a primary synchronization code (PSC) in a primary synchronization channel, wherein each base station's PSC is transmitted in a different timing within a system frame, and a midamble code in a broadcast channel, wherein the PSC and the midamble code are transmitted at a common fixed ratio for each base station, and a user equipment, said method comprising the steps of:

receiving said PSC and midamble code for each of said plurality of base stations;

identifying received midamble codes that have a power level such that the ratio of a power threshold and the received power level of the midamble code exceeds said common fixed ratio including:

measuring a power level of received PSCs;

detecting a frame timing of said PSCs which have a power level greater than ~~a~~ the power threshold;

identifying the base stations associated with the ~~PSCs which exceed said power threshold~~ midamble codes identified as having a power level such that the ratio of the power threshold and the received power level of the midamble code

exceeds said common fixed ratio and extracting base station information including a time offset and time slot of said identified base stations;

adjusting the frame timing of the PSC of said identified base stations in response to said time offset;

calculating a time of arrival (TOA) for each of said adjusted PSC's frame timing; and

adjusting a timing of said base station in response to said TOAs.

36. (previously presented): The method of claim 35 wherein the step of identifying the base stations includes the steps of :

detecting secondary synchronization codes (SSCs) in said primary synchronization channel; and

performing a confidence test on said SSCs.

37. (previously presented): The method of claim 35 wherein the step of adjusting said frame timing in response to said TOA includes the steps of :

calculating a time distance of arrival (TDOA) for each of said identified base stations using the TOA;

comparing said calculated TDOA to a stored TDOA; and

generating a timing error based on said comparison.

38. (original) The method of claim 37 wherein a transmitted power level of the midamble code and the PSC being a common fixed ratio for each of said base stations.